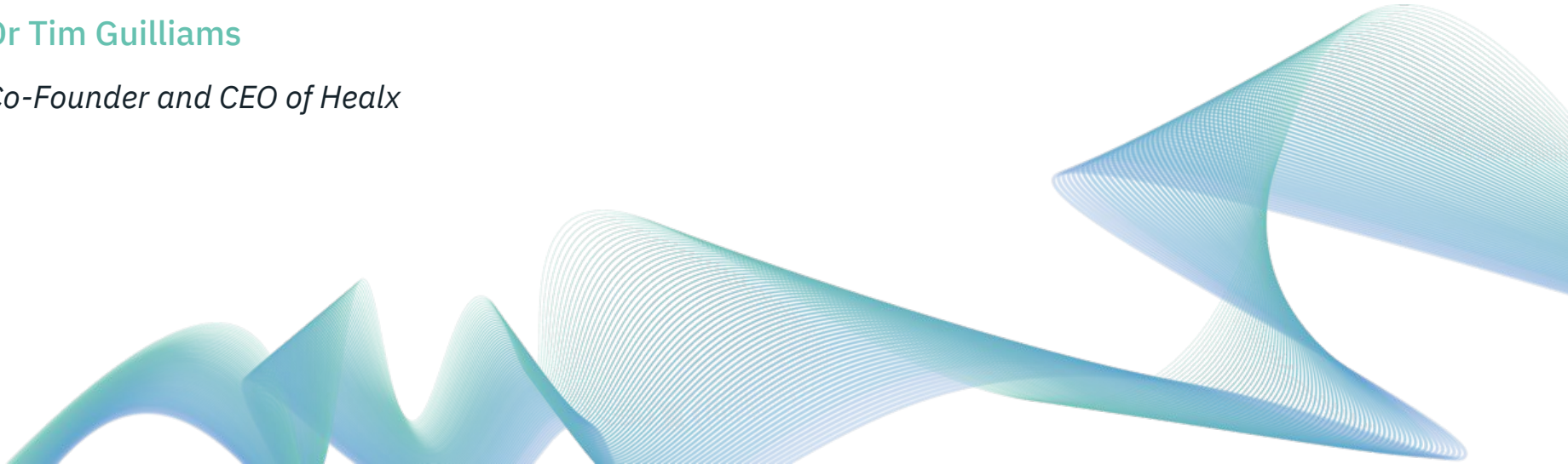


healx

Pioneering the next generation of drug discovery for rare diseases

Dr Tim Guilliams

Co-Founder and CEO of Healx



Healx is an AI-powered biotech
developing treatments for rare
diseases at an unprecedented scale

Inspired by the patients and families living with rare diseases



Dr Nick Sireau

Nick is not alone

7000

rare diseases

400 mil.

people affected worldwide

95%

without an approved treatment

But traditional drug discovery is broken

> 10 years

to bring a drug to market

> \$2 bil.

in R&D and market costs

> 95%

treatments fail to make it to
market

Why is traditional drug discovery broken?

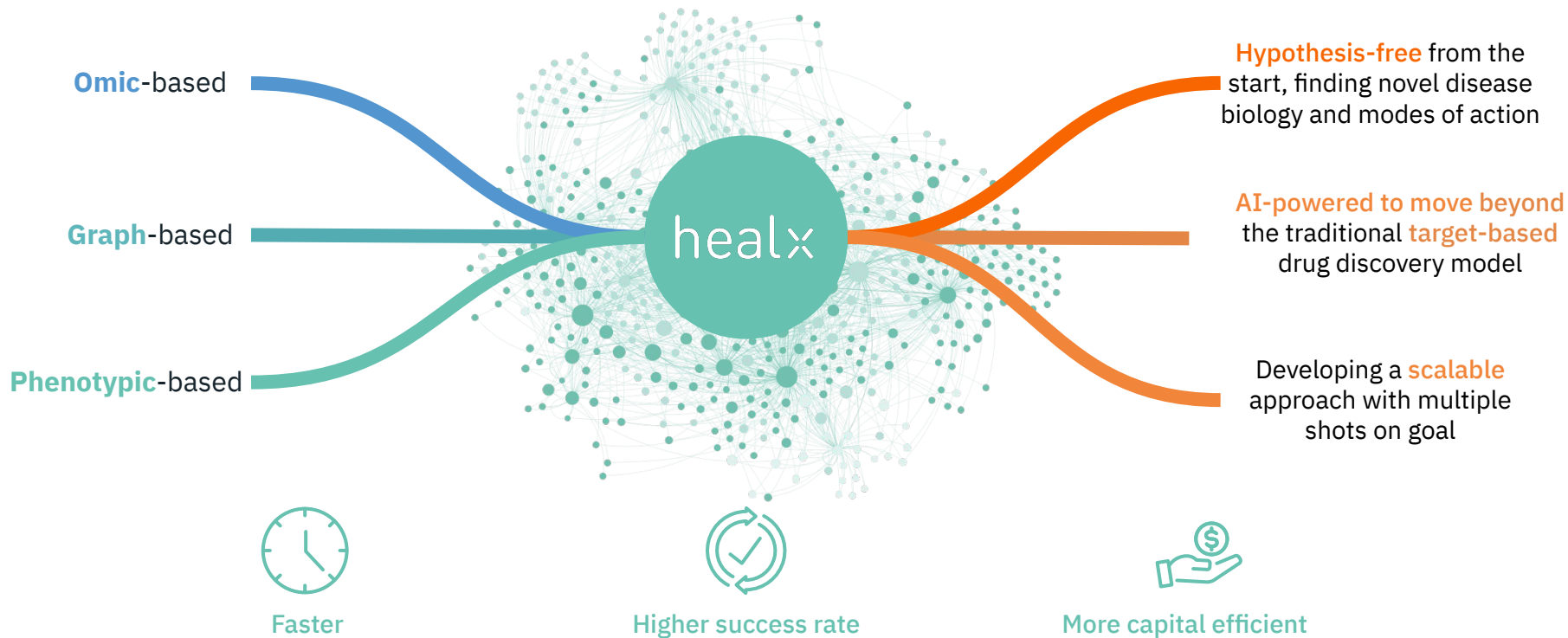


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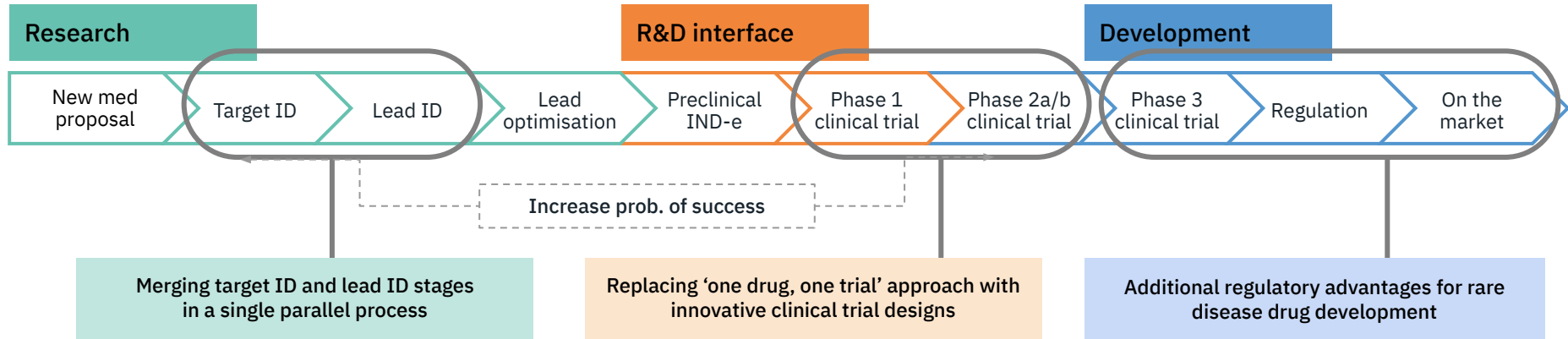
One disease, one target, one drug
– the old target-based paradigm was overly simple for complex diseases and broke the industry. We’re changing that.

Dr David Brown
Co-founder & Chairman, Healx
Former Global Head of Drug Discovery at Roche and
co-inventor of Viagra

Healx is pioneering the next generation of drug discovery



We are redefining and accelerating the drug discovery process



Faster



Higher success rate



More capital efficient

Supported by a three-way therapeutic strategy with multiple shots on goal to increase likelihood of clinical success

Drug redevelopment

1



Allows us to make the most of existing safety and efficacy data to accelerate treatment development to the clinic

Molecule enhancement

2



Derisked NCE approach by starting from known drug prediction (or combination) and enhance its molecular properties to desired profile

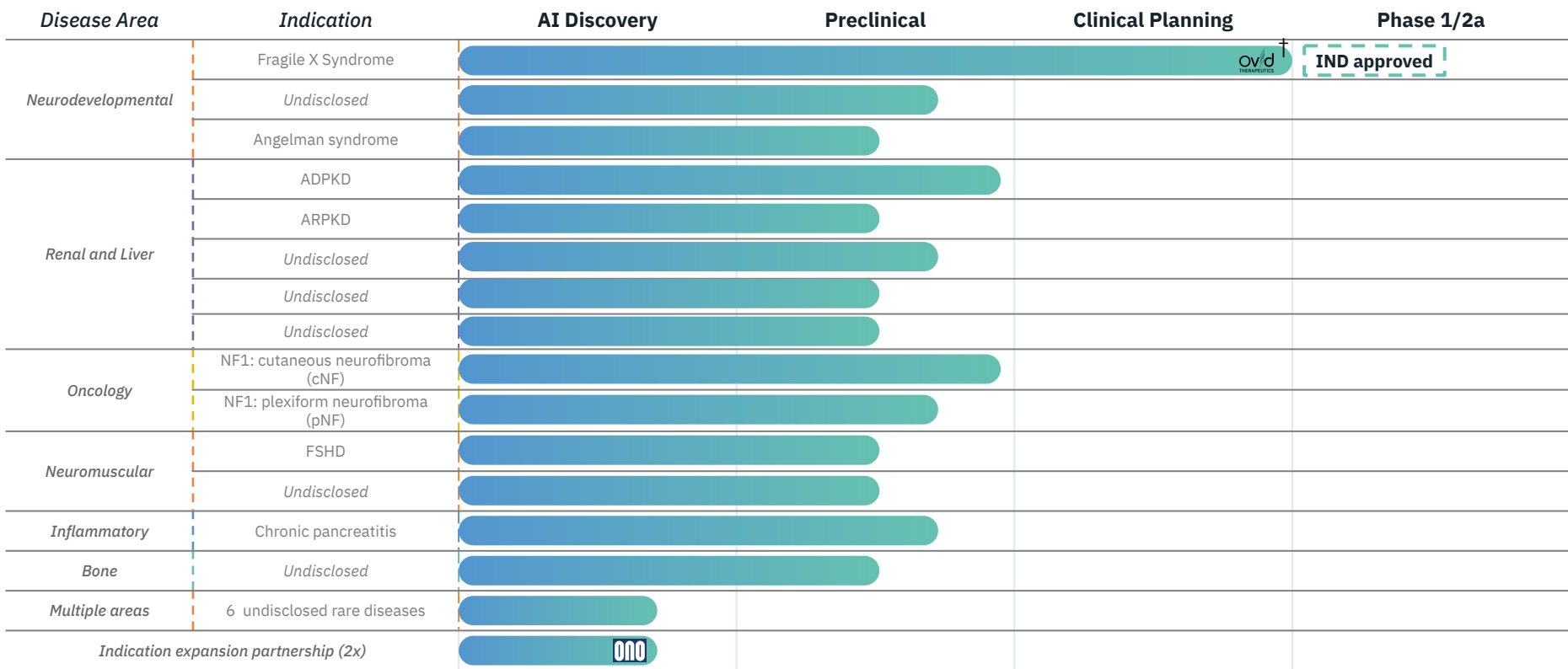
Combination therapies

3



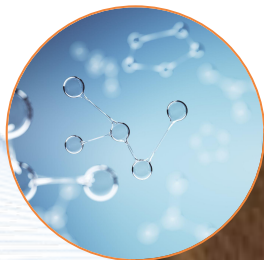
Higher chance of efficacy by targeting multiple modes of action and different disease pathways

It works. In a fraction of the time and cost, Healx has built a large therapeutic portfolio in rare disease.



[†] Option to in-license asset from Ovid Therapeutics

We're taking our first programme to clinical trial this year



Forbes

EDITORS' PICK | Oct 20, 2021, 05:00am EDT

Clinical Trials Expand For AI-Designed Drug To Treat Fragile X Syndrome

TC TechCrunch

UK startup Healx to begin clinical trial on repositioned drug for Fragile X syndrome

Emma Betuel @emmakbetuel / 2:46 PM GMT+1 • October 20, 2021

 Comment

About Fragile X syndrome and our partnership with FRAXA

Symptoms

- Intellectual disability
- ADHD, hyperactivity
- Anxiety, sensory issues
- Autistic behaviours
- Seizures (~25%)

Cause

- Caused by a CGG repeat in FMR1 gene (X chromosome)
- In most cases a defect turns this gene off

Prevalence

- Affects 1 / 4000 males and 1 / 8000 females
- Males more impacted than girls
- Most common genetic cause of autism
- **Billion dollar market**



“The Healx partnership has been nothing short of amazing. In less than two years together, we were able to deliver decades-worth of drug discovery, and now we’re taking those discoveries to the clinic.”

Michael Tranfaglia
Medical Director and Co-Founder
FRAXA Research Foundation

More about our technology platform, Healnet

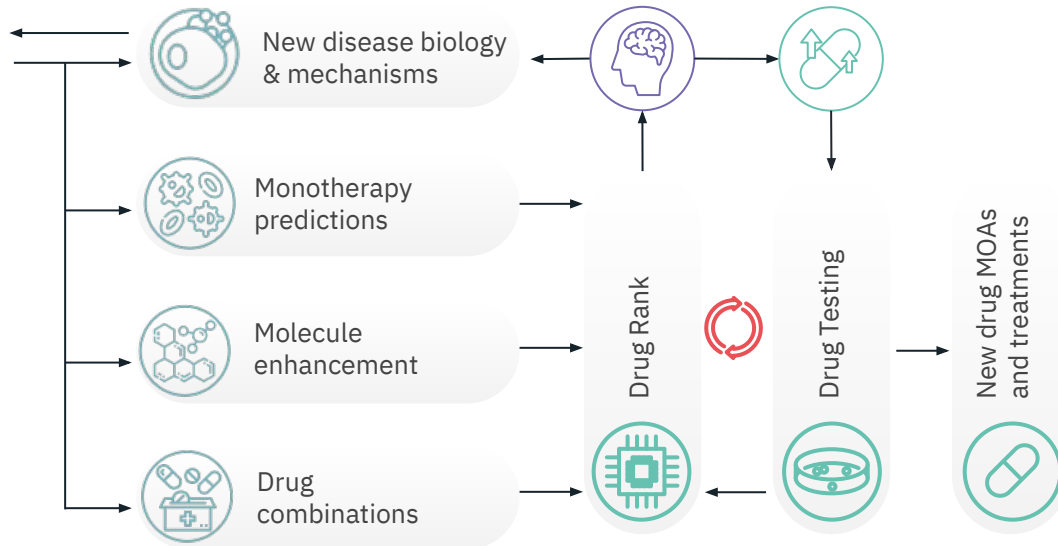
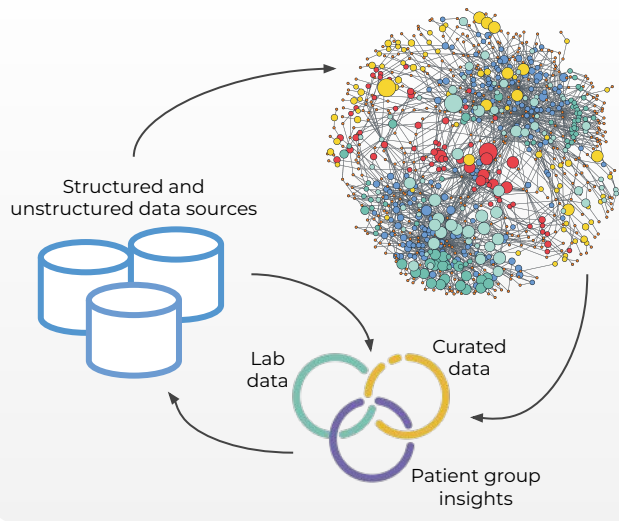
1 Ingest, integrate and augment multiple data sources

2 Disease ranking and clustering

3 AI-driven treatment predictions and decision support

4 Drug testing with proof of new mechanism

Healx data landscape & disease ranking



Platform and infrastructure

Google Cloud

aws

HashiCorp
Terraform

High Automation

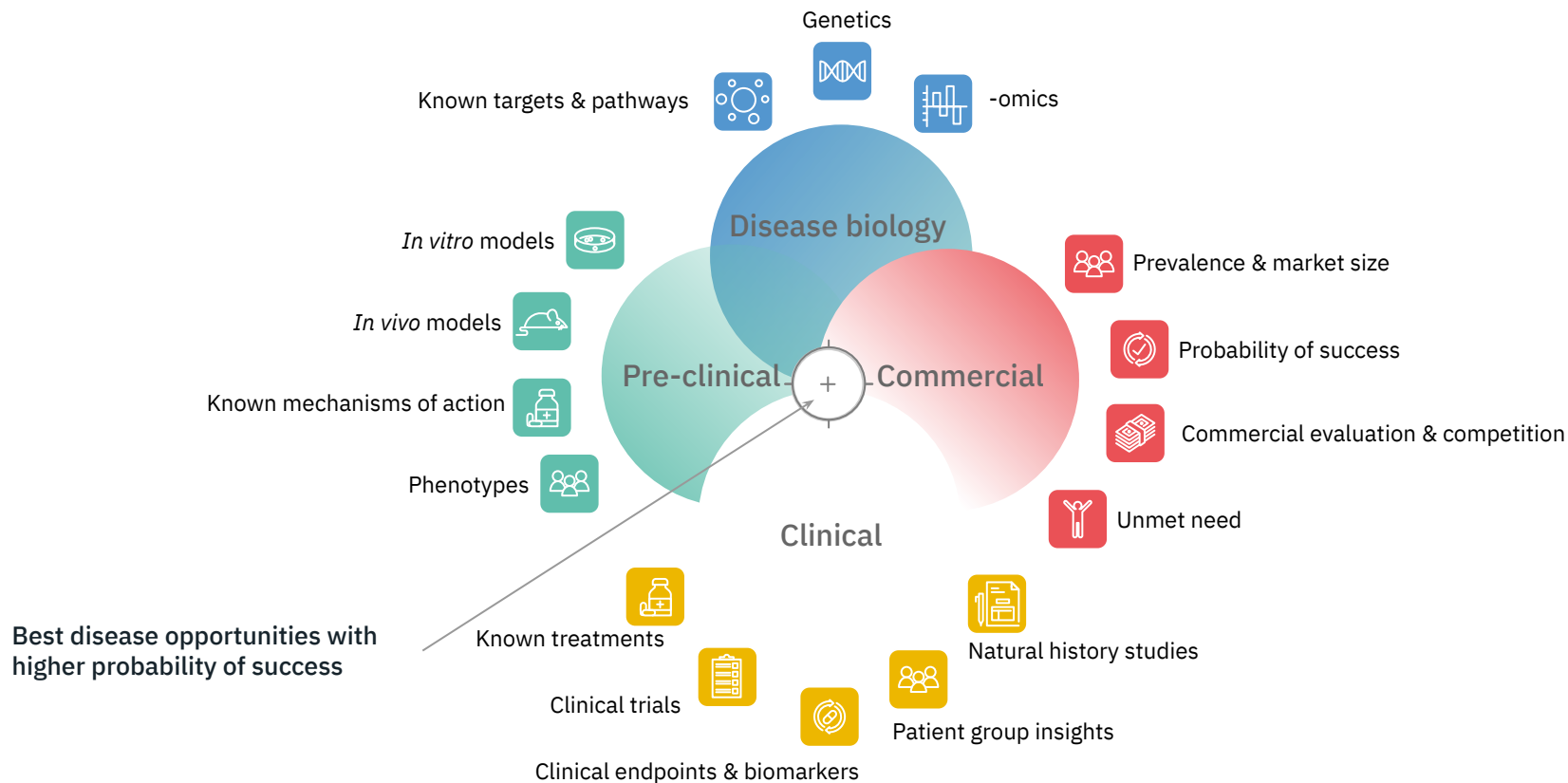


Secure by default



Build and scale at speed

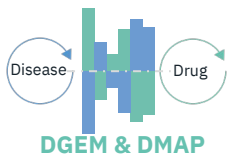
Data-driven disease ranking and selection to increase our probability of clinical success



We apply omic- and graph-based prediction methods to find new disease mechanisms and treatments

New disease biology and mechanisms

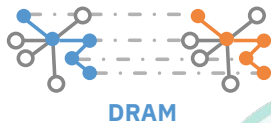
Altered gene expression



Altered biological pathways



Altered metabolic networks

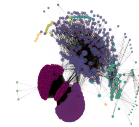


Network synergy and combinations

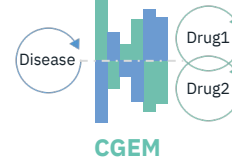
ML combinations + feedback loops



Cooperative affect the disease network



Altered gene expression



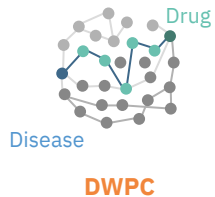
Synergistic monotherapies



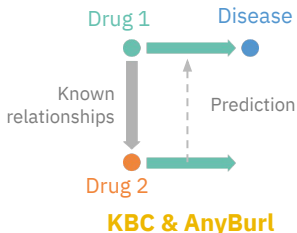
Novel mechanism + Treatment prediction

Knowledge graph and similarity matrices

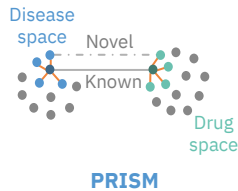
Weighted KG metapaths



KG ML reasoning



Guilt by association

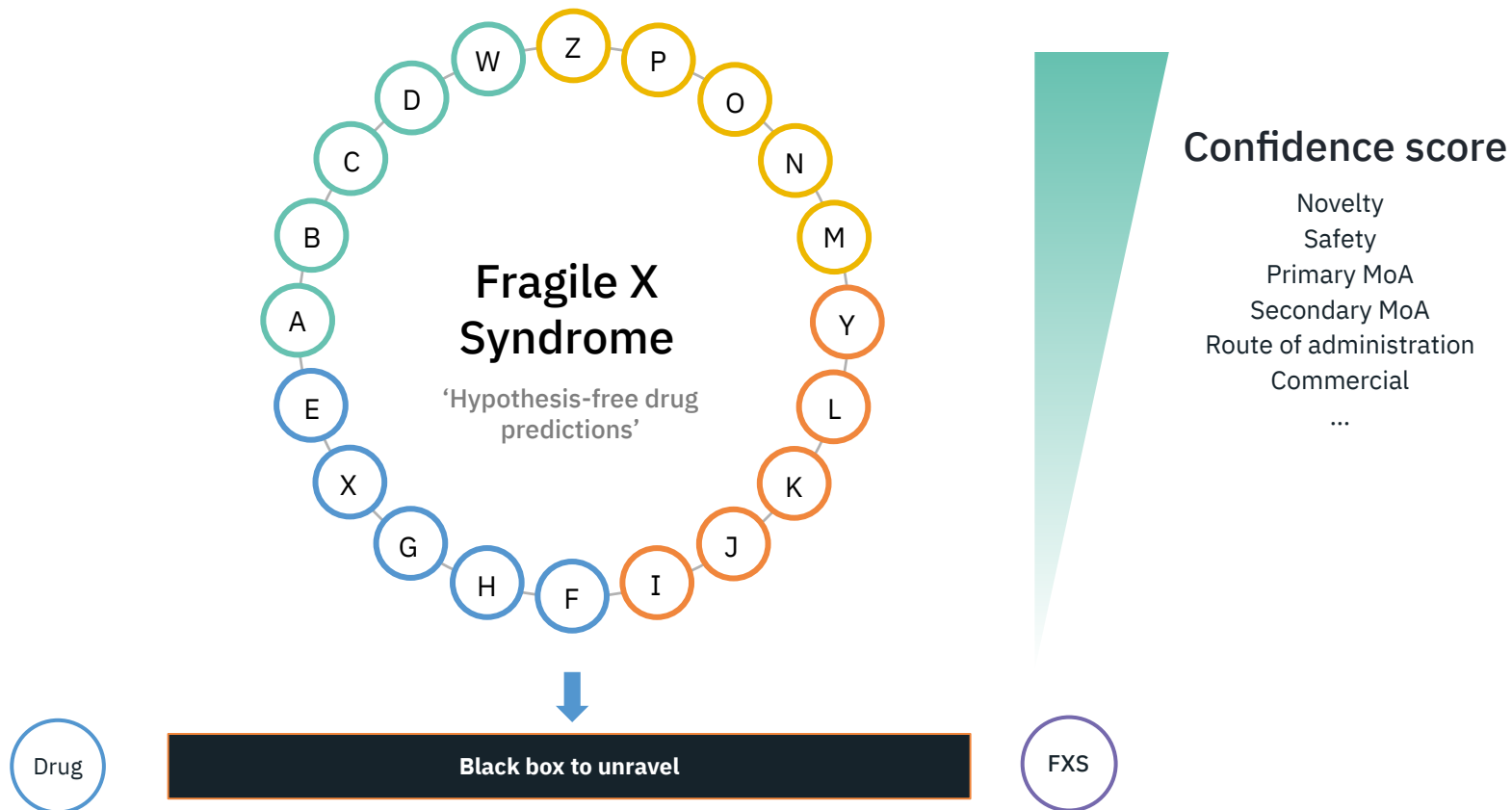


Therapeutic rationale

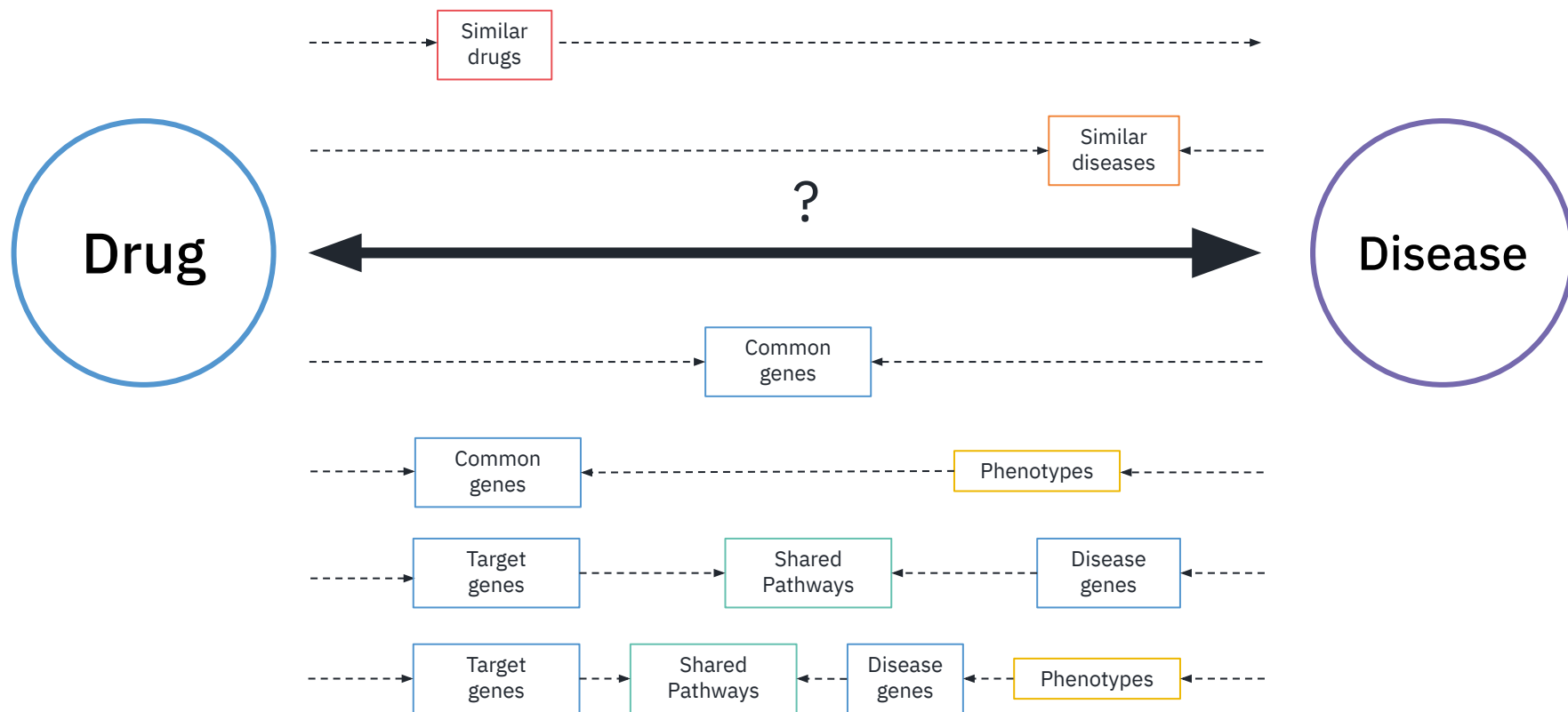


Our parallel approach to treatment prediction and ranking

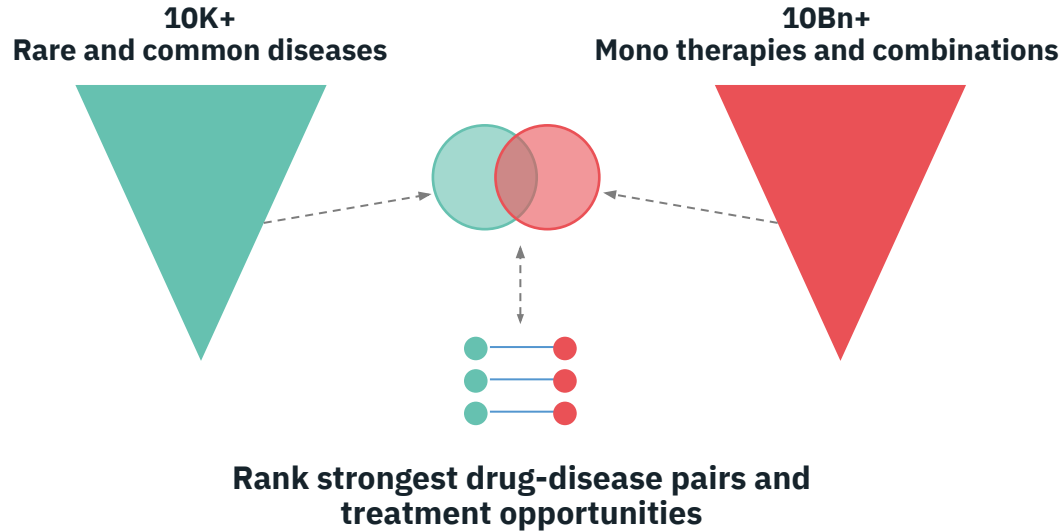
- DGEM/DMAP
- PRISM/DWPC
- DRAM/PASDA
- KBC/AnyBurl



Identifying new disease mechanisms and drug mode of action with 'Evidence Chain' algorithms



Long term vision: towards Massively Parallel treatment predictions and testing



Massively Parallel
(continuous automatic data collection, drug-disease matching and ranking)

+

Disease criteria

Treatment criteria

Best treatment opportunities

Prediction strength & novelty

+

Omic & Phenotypic validation



Get in touch

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Dr Tim Guilliams and Dr David Brown, Healx's Co-Founders

healx